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## CLAIMS

1.    A method of producing an electronic document using a plurality of pieces of physical media having a common position location pattern marked thereupon, comprising the steps of:

(i)    marking a first piece of the physical media using a digital pen, said pen being arranged to acquire data to enable the determination of the location of a tip thereof upon physical media from the position location pattern marked thereupon;

(ii)    acquiring data relating to strokes and the location of the strokes of the pen upon the first piece of the physical media sequentially, and storing said data in a memory ;

(iii)    acquiring data relating to strokes and the location of the strokes of the pen upon a second piece of the physical media sequentially, and storing said data in a memory; and

(iv)    arranging the data stored in steps (ii) and (iii) to form at least one electronic document in which the data relating to the first piece of physical media is distinguishable from the data relating to the second piece of physical media.

2.    The method of claim 1 wherein the first and second pieces of physical media are sheets or pages, and which method further comprises creating a page division marker in pen-acquired data by making a gesture with the pen upon the first page of physical media indicative of termination of use of the first page of a document.

3.    The method of claim 1 or claim 2 wherein the first and second pieces of physical media are sheets or pages and which further comprises creating an end of electronic document division marker in pen-acquired data by

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making a gesture with the pen upon a page, the gesture coding for an end of electronic document signal.

4.      The method of claim 2 or claim 3 comprising using a processor to
5    identify the marker and closing a first file in memory associated with the first page or document pursuant to recognition of the page or document division marker.

5.      The method of claim 4 comprising opening a second file in the
10   memory associated with the second page or document pursuant to closure of the first file.

6.      The method of any preceding claim comprising storing the data acquired in step (ii) in a short term memory in the pen initially and
15   transferring said data to a protected, longer term, storage memory prior to the commencement of step (iii).

7.      The method of claim 6 wherein the protected memory is in the pen.

20   8.      The method of claim 6 or claim 7 comprising clearing the short term memory before the commencement of step (iii).

9.      The method of any preceding claim comprising associating a time stamp with the position of the pen relative to the pattern.
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10.     The method of claim 9 wherein step (iv) comprises arranging the data stored in steps (ii) and (iii) in order of the time stamp.

11.     The method of any preceding claim comprising partitioning pen-
30   acquired data into different files prior to transmitting the data off-pen.

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12.    The method of any of claims 1 to 10 comprising transferring the data stored in steps (ii) and (iii) to a remote, off-pen, processor unit prior to step (iv).

13.    A digital pen adapted for use with a page of position-determining pattern, the pen having a pattern position capturer adapted to capture data relating to the position of the pen relative to a said pattern and adapted to store pen position data in a memory, and wherein the pen has a processor having software adapted to introduce a page or document end marker into pen-acquired pen-position data prior to storing the data in the memory.

14.    A digital pen adapted for use with a page of position-determining pattern, the pen having:

a memory;

a pattern position capturer adapted to capture data relating to the position of the pen in relation to a said pattern and to store pen position data in a memory;

a clock adapted to produce time signals; and wherein

the pen has a processor having software adapted to associate time signals with the pen position data and to evaluate pen position with time to determine when a user has finished marking a first  physical page and begins marking a second physical page having the same pattern, and to either:

(i)    create a page end marker in the pen-captured data; or

(ii)    store pen-acquired data from different physical pages, each having the same pattern, in different electronic files in the memory of the pen.

15.   A pen according to claim 13 or claim 14 wherein the processor has software adapted to store pen-acquired data in a first memory of the pen and to transfer the data to a file in a second, protected, memory of the pen upon the determination of a page end.

16.   A pen according to claim 15 wherein the processor has software adapted to erase the first memory pursuant to transfer of pen-acquired data previously stored there to the protected memory.

17.   A pen according to any of claims 13 to 16 in which the processor has software adapted to cause the pen-acquired data relating to successive physical pages, each having the same pattern, to be stored in either:
    (i)    the same file in memory; or
    (ii)   different respective files, one per physical page, in memory.

18.   A digital document production system comprising a digital pen adapted for use with pages printed with a position-determining pattern, and an off-pen processor adapted to process data received from said pen; the pen comprising a writing tip, a position data acquirer adapted to acquire data relating to the position of the writing tip of the pen, a clock adapted to associate a time value with an acquired pen tip position, and an on-pen processor; at least one of the on-pen or off-pen processors being adapted to process data acquired by the pen writing on a first page having a position-determining pattern and data acquired by the pen writing on a second page having the same position-determining pattern in order to separate into different electronic documents data relating to markings made on the first page and markings made on the second page.

19.   A system according to claim 18 wherein the pen comprises a short term data storage memory and a long term data storage memory, the on-pen

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processor being arranged to store data corresponding to the first page, or a first electronic document, initially in the short term memory and to transfer first page data, or first electronic document data, to the long term memory device prior to storing data corresponding to the second page, or a second electronic document, in the short term memory.

20.   A system according to claim 18 or claim 19 wherein:

(i)   one of the said processors is adapted to recognise in the pen-acquired data a code coding for an end of page marker, and wherein a said processor is adapted to store data acquired from different physical pages in different electronic files in memory using end of page markers to partition the pen-acquired data; and/or

(ii)   one of the said processors is adapted to recognise in the pen-acquired data a code coding for an end of electronic document marker, and wherein a said processor is adapted to store data acquired before said end of electronic document code in one electronic document and data acquired after said end of electronic document code in a different electronic document.

21.   A system according to any one of claims 18 to 20 wherein one of the said processors is adapted to use pen-position with time pen-acquired data to determine what pen-acquired data relates to which physical page, and wherein a said processor is adapted to store pen-acquired data in separate files relating to separate physical pages pursuant to such a determination.

22.   Software, optionally encoded upon a machine-readable storage medium, which when executed upon a processor causes the processor to:

(i)   receive a first signal, indicative of the position of a pen upon a first piece of physical media having printed thereupon a position

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location pattern that is common with a second piece of physical media;

(ii)    receive a second signal indicative of strokes, and the location of said strokes, of the pen upon the second piece of physical media; and

(iii)    use the first and second signals to produce a digital document.

23.    Software according to claim 22 which causes the processor to separate data derived from the first and second signals into separate memory files.

24.    A method of producing an electronic document using a plurality of pieces of digital paper having a common position location pattern printed thereupon, comprising the steps of:

(i)    marking a first piece of the digital paper using a digital pen, said digital pen being arranged to acquire data from which it is possible to determine the location of a tip thereof upon digital paper from the position location pattern printed thereupon;

(ii)    acquiring data relating to strokes and the location of the strokes of the digital pen upon the first piece of the digital paper sequentially, and storing said data in a storage device ;

(iii)    acquiring data relating to strokes and the location of the strokes of the digital pen upon a second piece of the digital paper sequentially, and storing said data in a solid state memory chip; and

(iv)    arranging the data stored in steps (ii) and (iii) to form one or more electronic documents which represent the markings made on the physical pieces of digital paper in a matter such that the markings made on the first piece are separated from the markings made on the second piece.

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25.    A digital document production system comprising a digital pen suitable for marking digital paper having a position location pattern printed thereupon, and a computer;

5         the digital pen comprising a camera arranged to capture a first data set corresponding to strokes and the location of said strokes upon a first piece of the digital paper having a position location pattern printed thereupon, and a communication link arranged to place the camera and the computer in communication;

10        the camera being arranged to capture a second data set corresponding to strokes of the digital pen and the location of said strokes upon a second piece of digital paper, the second piece of digital paper having a position location pattern printed thereupon which is common with that printed upon the first piece of digital paper;

15        the computer being arranged to receive a data structure corresponding to said first data set and a data structure corresponding to said second data set; and;

          the computer being arranged to decouple data structures corresponding to the first and second data sets to produce a digital document which has electronic equivalents to markings made on the first

20     piece of digital paper separated from markings made on the second piece of paper; and wherein the computer is disposed either on the pen or off-pen.


26.    A method of using the same digital pen readable position-determining pattern to create a digital document comprising marking a first

25     material having a position-determining pattern provided on it with a digital pen and capturing first page data relating to pen movements on the first page;

          marking a second page of material having the same position-determining pattern as the first page with the pen and capturing second

30     page data relating to pen movements on the second page;

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transmitting the first page data and the second page data to an
on-pen or off-pen processor; and

establishing from at least one of the first page data and/or the second
page data which pen movements were made on the first page and
5              which were made on the second page.

27.    A digital pen adapted to acquire data representative of pen
movement over a page, the pen having an optical position determining
information capturing means adapted to view a position-determining
10    pattern printed on patterned pages, and a computer memory, the computer
memory containing data acquired by the information capturing means from
a plurality of patterned pages, each having the same position-determining
pattern on them, data from different pages being either:

(i)      in separate files in the memory; or

15            (ii)     delineated by page division markers acquired by the pen when
transiting from one physical page to another.

28.    An off-pen processor adapted to receive signals from a digital pen,
the digital pen being adapted to acquire data relating to the position of the
20    pen associated with time relative to a position-determining pattern, wherein
the processor is adapted to receive from the pen signals containing pen
position information relating to the use of the pen on a plurality of sheets
of the same pattern, and wherein the processor is adapted to distinguish pen
movements made on one sheet from pen movements made on another sheet
25    either:

(i)      by using time information to distinguish between movement
of the pen on different sheets having the same pattern, or

(ii)     by identifying sheet division marker codes included in the
signals from the pen.